Talmy Givón: *The genesis of syntactic complexity: Diachrony, ontogeny, neuro-cognition, evolution*. Amsterdam: John Benjamins, 2009. xviii + 366 pp.

In *The genesis of syntactic complexity*, Talmy Givón develops a multidisciplinary approach to the origins of human language in general and the rise of syntactic complexity in particular. By weaving together insights in language change, language acquisition, the structure of pidgins, the structure of aphasiac speech, the neurology of language processing, animal communication and cognition, biological evolution and human prehistory, a scenario is formulated of how syntactic complexity could have plausibly developed.

Syntactic complexity is understood as the imposition of hierarchic organization on communicative content. This covers the syntactic bundling of information in simple clauses but also the creation of recursive structures through embedding. It is especially recursive syntactic structures that dominate the discussion, with a specific focus on the emergence of clause embedding in VPs (complementation) and in NPs (relativization).

The reason for the focus on recursive structures is that recursivity has been given pride of place as the hallmark of the human language capacity by Hauser, Chomsky and Fitch (2002). These authors have argued that the evolution of a capacity for recursion is precisely what has set human communication apart from animal communication. At the same time, they have suggested that the computational mechanism for recursion may have arisen independently of adaptive pressures on communication, implying also that the core properties of syntax may have been moulded by other than communicative needs. *The genesis of syntactic complexity* takes issue with this view, arguing that the uniqueness of human communication is misrepresented if it is reduced to recursivity, and that the syntactic character of human language can in fact be explained as having arisen under the pressures of online communicative demands.

The first half of the following discussion presents an outline of the argumentation in *The genesis of syntactic complexity*. Because the argument is complex and very much interwoven, I do not strictly present it chapter-by-chapter but rather highlight the main ideas and how they build up to the general claims. The second half of this review is devoted to a critical evaluation, pointing out what I see as the work's main contributions to the existing literature as well as some potential weaknesses.

A central argument for the view developed in *The genesis of syntactic complexity* comes from a consideration of the emergence of clause embedding in the two well-documented developmental trends in language – i.e. language change and language acquisition. In both, it is argued, syntactic clause embedding develops from earlier paratactic structures. For example, in language history, complex serial verb constructions are often found to have been assembled from a chained two-clause paratactic precursor, by merging the clauses intonationally and semantically first and with (potential) reduction of verbal morphology on one of the erstwhile independent verbs later. In (1), for instance, a one-time chained construction has been merged into a single causative clause (quoted from p.80):

(1) Supyire (OV; Carlson 1994):

mii	à	u	karima	à	ngukuu	lyi
I	PERF	him	force	PERF	chicken	eat

'I forced him to eat the chicken'

(Hist.: 'I forced him and he ate the chicken')

As another example, in language acquisition, the emergence of relative clauses is typically accompanied by a stage of referential negotiations across conversational turns or over multiple intonation units, as in (2) (quoted from p.233):

(2) MOTHER: What's this?

NINA: A little ducky. Swimming in the water.

The recurrent development from paratactic to syntactic structures in language change and language acquisition opens the door to further inferences. A similar trajectory from paratactic to syntactic could be extrapolated for the emergence of syntax in language evolution. From this, it follows that if one can understand the communicative gain of the syntactic mode of expression over its paratactic precursor, this can also help pin down the communicative-adaptive factors underlying the rise of syntax within the broader context of human evolution.

Considering the paratactic-to-syntactic shift more closely, then, there is evidence of its functionally-driven nature, both in language change and in language acquisition. In language change, it is found that the typological diversity in clause embedding strategies is determined to a considerable extent by diversity in the source constructions from which clause embedding can develop. For example, a highly nominalizing language can recruit its relative clauses from appositionally used nominalizations as in (3a), from Ute (quoted from p.107). By contrast, a finite language will more likely recruit them via clause chains as in (3b), from Bambara, where *min* is a demonstrative reinterpreted as relative marker (quoted from p.98). Inevitably, the outcomes, though functionally alike, will be structurally different.

(3) a.

tʉpʉy-ch,	'uru	mamach-i	tʉkan'na-pʉ-vwan	wacʉ-ka-n(a), ...	
rock/SUBJ	that/OBJ	woman-GEN	table-OBJ-on	put-PERF-NOM	

'the rock, that one that the woman put on the table, ...'

(Hist.: 'the rock, that of the woman's putting on the table, ...')

b.

n	ye	o	ye,	cɛ	min	ye	muru	san.
I	PAST	him	see	man	REL	PAST	knife	buy

'I saw him, the man who bought the knife.'

(Hist.: ‘I saw him, that man bought the knife’)

Yet once the differences in diachronic pathways are factored out, it is possible to see also what is constant. Apart from the tendency for clause-embedding to arise from paratactic precursors, as again illustrated in (3), the constant element is the function the historical source constructions fulfil in discourse. Typically, the function of a new syntactic pattern is foreshadowed as a pragmatic effect of its historical source. Thus, the precursors of relative clauses in (3) already aid referential identification. Similarly, verbal predicates that get involved in clause union, as in (1) above, regardless of the diachronic pathway, tend to belong to a relatively small group of lexical items with general communicatively central meanings, again suggesting a functionally constant starting point for change.

One implication is that the transition from parataxis to clause-embedding involves the syntactic codification of some specific discourse function. This is achieved by recruiting patterns from online communication and devoting them specifically to a particular function. Another implication is that universals in language reside not so much in the typological diversity of structures, but in the functional underpinnings of the diachronic pathways that lead to diversity.

In language acquisition, too, the emergence of clause-embedding is functionally-driven, its appearance being in step with changes in the child’s communicative ecology. Specifically, one type of clause-embedding (complex verb phrases) develops well before another (relative clauses), because they answer to different communicative needs that manifest themselves at different points in a child’s development. Complex verb phrases are acquired in the context of early child communication, which is still highly context-dependent and dominated by manipulative speech acts and one-clause turns. The main communicative goal at this stage is getting things done in the here and now. Early complex verb phrases, accordingly, are mostly used to mark direct manipulative speech acts, as illustrated by *let me give* and *wanna give* in (4) (quoted from p. 154).

(4)	NINA:	Yeah, let me give that to Poy now. I want...	(request)
	MOTHER:	What do you want to do?	(solicitation)
	NINA:	I wanna give that to Poy now.	(request)

Relative clauses, by contrast, arise only as the increase in displaced reference and declarative speech-acts and the rise of multipropositional discourse call for increasingly sophisticated means for referential tracking. It is, in other words, a shift in the child’s communicative ecology that makes restrictive nominal modification worth acquiring.

The evidence of language change and language acquisition reveals functional motivations for the development of syntax. In this context, it is interesting to consider the specific functions syntax fulfils. These can mostly be characterized as ways of coding the speaker’s representation of the hearer’s deontic and epistemic state of mind as it evolves during communication. To stick with the by-

now familiar examples, this includes the speaker's conception of the referential accessibility of discourse participants to the hearer (which relative clauses can serve to manipulate), as well as the speaker's conception of the hearer's deontic and epistimic attitudes towards propositions (which can be tracked by means of complex verb phrases). Syntax, then, is largely devoted to encoding 'theory of mind' operations.

The reasons why syntax is particularly good at this can be gleaned from early child language, pidgin communication and the discourse of Broca's aphasia patients. All three forms of communication involve some form of 'creative regression' in the sense that they cannot depend on morphosyntax. The result is communication that, while not being unorganized, depends much more heavily on contextual inferencing, is thereby harder to process, slower and more error-prone. Moreover, hierarchically organised chunking, which is what syntax offers to the language user, is argued to be also what makes expert performers fluent at their tasks in other cognitive domains – dancing, playing music, typing, reading, etc. Chunking complex sequential information into hierarchically organised schemata contributes to increased automaticity, eases retrieval and thus decreases attentional demands. In other words, syntax offers a way of reducing the processing burden of communication, both by speeding up processing and by eliminating some costly and error-prone context-dependent inferencing.

Against this background of what syntax does for communication, it is possible to begin to address the question of how the rise of syntax would have fitted into the evolution of language. The evolution of language in general must be linked to an 'information explosion' in human evolution that boosted the need for communication. Experimental evidence shows that the cognitive capacity of pre-human animals clearly surpasses their communicative code. Primates have a rich mental lexicon and can represent events and even event sequences. Neurological evidence confirms this by indicating that the brain circuits relied on for semantic and episodic representation have pre-linguistic precursors in the visual-information processing trends in primates. Only, primates do not or hardly code their mental representations. The trigger for the rise of language, then, must have been primarily a communicative need rather than a cognitive need.

A clearer understanding of how communicative needs could have changed can be gathered from what animals do communicate about. Among higher primates, most information is shared. Both generic information (territory, social structure) and episodic information (the events of daily life) are known across the group and usually no group member avails of additional adaptively valuable declarative information. What gets communicated are deontic signals about the immediate context. This cultural and communicative ecology resembles that of young children, and primate communication is accordingly reminiscent of children's early language use in being deontic, monopropositional and extremely context-dependent. Informational stability gets disrupted only if information imbalances arise between group members. Contextual factors that could have brought this about in the course of human evolution are a drastically expanded foraging range, an increase in group size, and an accelerated rate of cultural change involving within-group informational specialization. Down the causal

chain, various further (and presumably correlated) factors could have contributed to this, including tool-making, bipedalism, big-game hunting etc.

Taken together, the above suggests a scenario for the genesis of language and (complex) syntax. Currently attested communicative behaviour among primates – deontic and context-dependent – serves as a plausible starting point. A developmental analogue is provided by language acquisition, which shows a similar coupling of increasing linguistic complexity to an expanding communicative ecology. Growing information imbalances in an increasingly complex social setting would be the driving force for the successive emergence of a coded lexicon, one-word declarative speech-acts, pre-grammatical word combinations and multipropositional discourse. With the advent of multipropositional discourse comes the need for greater processing efficiency, for the reduction of context-dependence, and for ways to monitor and guide the addressee's state of mind as it changes during discourse – that is, the need for syntax. Note here that the evolutionary recency of syntax is consistent with its absence in animal communication, even under training, as well as with neurological findings indicating that syntactic processing is highly distributed and does not yet rely on exclusively dedicated modules. Known developments in diachrony, finally, provide the concrete mechanisms to arrive at syntactic complexity, as they present a picture of how syntactic structures are derived from paratactic precursors under functional pressures in online behaviour.

To see what Talmy Givón's *The genesis of syntactic complexity* contributes to the current understanding of language evolution, it is convenient to position it with respect to Hauser, Chomsky and Fitch (2002), against which it is an explicit reaction. Recall that Hauser, Chomsky and Fitch (2002) suggest that recursivity sets human language apart from any other communication system in nature but (paradoxically) arose outside the adaptive context of communication. Though keeping many details rather vague, Hauser, Chomsky and Fitch (2002) link this suggestion to the claim that most aspects of human language have some equivalent in animal communication systems, except recursivity. The reasoning then is that its conspicuous absence in animal communication not only makes recursivity unique to human communication, but also adds plausibility to the idea that recursivity would have "evolved for reasons other than language" (2002: 1578). A further consequence of this view is that the structural details of syntax, of which recursivity is the assumed core component, might not be adapted to communication, being "by-products of preexisting constraints rather than end products of a history of natural selection" (2002: 1574).

On its most explicit level, *The genesis of syntactic complexity* challenges this thesis by arguing that syntactic recursivity is itself the "by-product" (p.240, 338). The usefulness of syntax is claimed to lie in its capacity to perform theory of mind operations in a less context-dependent and maximally efficient way. It is not recursivity per se, then, that forms the great adaptive benefit syntax has to offer. This is especially apparent in clause union. Diachronically, following clause union, recursivity often disappears again, as one of the erstwhile verb phrases gets reduced to an operator and eventually ends up as morphological marking on the remaining verb. In ontology, the more grammaticalized state in

which one verb functions as operator on the other appears to be the prime acquisitional target. In that light, the availability for structures allowing explicit clause-embedding only falls out of the need for devices that let the speaker monitor and direct the hearer's deontic and epistemic attitudes. Whether or not those devices involve recursivity is really beside the point.

As I interpret it, the strongest support for this argument is in the many examples Givón offers, all demonstrating the same point. On the one hand, as far as meaning is concerned, recursivity is there in pregrammatical communication, albeit in paratactic, unencoded and context-dependent form. I believe this shows clearly enough that to communicate an endless variety of thoughts no syntactic recursivity is needed. On the other, diachrony demonstrates that when 'pragmatic' recursivity, which is present also in ordinary usage, gets syntactically encoded, it is not for the sake of recursivity as such, but because recursivity can be exploited for some particular discourse function. Recursive representation no doubt has its role and place in the cognitive development of the human species, but it is neither the climax of linguistic development nor what syntax is all about.

Less explicitly, *The genesis of syntactic complexity* also eats away at the plausibility of Hauser, Chomsky and Fitch's (2002) proposal by taking on its implications. First, an argument is mounted against the possibility that structural features could be communicatively a-functional, which would have been implied had they been selected for under other than communicative pressures. In principle, the emergence of structural features is a functionally-driven diachronic (rather than evolutionary) process linked to communicative needs in online discourse. What arbitrariness there is arises from the "overlaying of adaptively-driven changes in temporal order", which can lead to "considerable restructuring and arbitrary-seeming structure-function pairing, thus to seemingly non-adaptive relic features" (p.316). Still, note here that the point is perhaps not as straightforward as it seems. User-optimality is, also in Givón's view, partly determined by how language is processed, hence by biologically imposed constraints, yet these constraints are not seen to be specific to a faculty of language, nor is it claimed that the effect they have on language structure renders language a-functional in some respects. Rather, language structure is conceived of as an optimally adapted response to what our brains can handle.

Second, if certain structural features in language are the outcome of evolution and neurological implementation, as suggested by Hauser, Chomsky and Fitch (2002), they must be hard-wired and universal. Here, too, *The genesis of syntactic complexity* takes a different view on language universals, arguing that what is universal are not extant features but the diachronic processes that give rise to them. The many examples provided make a convincing case for the existence of these processes and their effect on synchronic structural diversity. Of course, no amount of positive evidence can prove the absence of hard-wired features with some structural manifestation in the grammars of the world (even if the task of finding them seems, by now, daunting). What makes Givón's alternative attractive on this point is that it makes fewer presuppositions, explaining extant language structure through processes that can be seen at work today. This is in line with Heine and Kuteva's premise that "a hypothe-

sis on language evolution that is not in accordance with observations on change in modern languages is less plausible than one that is" (2007: 16).

It should be added that this uniformitarian approach is somewhat more precarious than it may appear. In fact, we know that at some point in evolution cognitive capacities must have changed, so we know that uniformitarianism just cannot hold all the way through – only we do not know for certain how far back uniformitarianism can be stretched. Givón, like Heine and Kuteva (2007), chooses to see the rise of syntax primarily as a diachronic phenomenon, falling out of the behaviour of modern language users. Given our current state of knowledge on syntax and language processing, a convincing case is made that such a model could suffice to explain the rise of the structures attested in the world's languages. So it is preferable as the simplest explanation, even if it still requires some leap of faith.

Finally, *The genesis of syntactic complexity* fills in some of the details that Hauser, Chomsky and Fitch (2002) leave open, and weaves these into a coherent scenario. With the paratactic-to-syntactic shift, a diachronic mechanism is proposed that can explain the emergence of concrete syntactic structures where before there are none – a point on which Hauser, Chomsky and Fitch (2002) have remained silent altogether. Being embedded in grammaticalization theory, the paratactic-to-syntactic mechanism is more realistic than scenarios deriving structure from holistic proto-clauses (as proposed by Wray 1998), which in any case face several other problems (Tallerman 2007). Givón's proposal resembles scenarios outlined by Jackendoff (1999) and Bickerton (2003), who likewise claim that complexity arises through combination of elements, but it supplies more detail. Although its importance may be overemphasised (see below), the paratactic-to-syntactic shift is at least a concrete process for recruiting syntactic structure for discourse from discourse. Its applicability, moreover, may extend beyond recursivity/complex syntax, as is suggested by the fact that general iconic principles of pre-grammatical communication (e.g. ellipsis, ordering, proximity) likewise tend to have surviving codified correlates in grammar (p.244).

Next to a diachronic mechanism, a relatively concrete evolutionary scenario is provided that does not fail to single out specific adaptive pressures and that, in doing so, contextualizes the rise of language in the evolution of the human species, and the rise of syntax within the development of language. In several ways, the scenario has advantages over earlier proposals. For one, the information explosion and subsequent in-group information imbalance seems more plausible as the core adaptive pressure than Dunbar's (1993) proposal, holding that language developed to maintain social bonding at a time when grooming became ineffective due to increasing group sizes. Givón's argument that early language must have been primarily deontic is convincing and precludes early language from serving an important social bonding function comparable to present-day small talk. Moreover, it is hard to conceive how small talk would have been subserved by the effortful, highly context-dependent and probably partly gestural communication of pregrammar that must have preceded human language as we know it today. For another, in line with the normal gradualness of evolution, *The genesis of syntactic complexity* posits no drastic biological changes. It is suggested that, to the extent that neurologi-

cal structures must arise to accommodate language processing, this happens by minimal stepwise changes, co-opting pre-existing modules. Again, it is safer to make assumptions maximally concordant with the majority of known evolutionary processes.

On the whole, then, *The genesis of syntactic complexity* manages to deliver a coherent scenario for the evolution of language and the emergence of syntactic complexity, going into surprising detail. I believe it is the detail, on the one hand, and the cogency of the overall argument, on the other, that in the end gives the work its force. A convincing case is made to argue what syntax is really for, taking into account an impressive range of evidence, and the consequences of this are spelled out into a consistent and specific model of the origins of syntax. Despite the justified concerns voiced by Slobin (2002) regarding the dangers of extrapolating from language acquisition and diachrony to language evolution, Givón largely – but perhaps not completely (see below) – succeeds in making the best of the available data, singling out what is relevant in the two well-documented developmental trends, and bringing this to bear on the evolutionary puzzle. In all these respects, *The genesis of syntactic complexity* is definitely a step forward.

That said, the book is not entirely without its weaknesses. In some cases this is because the crucial evidence is still missing or underexplored; in others it is because existing evidence is, I believe, overstretched or interpreted one-sidedly. For example, what is clearly still missing is a more explicit integration of the evolutionary model outlined in *The genesis of syntactic complexity* with the (inevitably patchy) archaeological record. Similarly, though probably less hard to supply, the claim that syntax makes communication easier to process is not fully backed up by psycholinguistic evidence. Givón's criticism on psycholinguistic research, much of which has aimed to demonstrate that syntactic complexity correlates positively with processing difficulty, is certainly original and probably to some extent justified. It seems quite possible that a complex syntactic structure will actually be easier to process than a simpler alternative, provided it is used in the kind of communicative context to which it has been diachronically tailored. For now, however, as Givón must recognize (p.288), the experimental evidence is more or less missing.

In this context, it should further be pointed out that the precise impact of chunking, automation and hierarchic organization on processing is still to be worked out in more detail. For instance, it remains unclear whether automation and hierarchic organization benefit processing in the same way for speaker and hearer. More seriously, the comparison of language with other domains of expert performance, while no doubt instructive, will eventually need to be spelt out with much more precision. For example, the hierarchic organization that aids chess performance, to which Givón draws explicit analogies (p.287), actually pertains to organization of information (particular chess board constellations) in long-term memory (Gobet 2005), so whether this is directly comparable to the hierarchic organization in syntax, where it is the linguistic output itself that is hierarchically structured, is doubtful. One could choose here to understand hierarchic organization as the organization of linguistic templates into 'construction networks', as in the usage-based tradition (e.g. Langacker 1987), but clearly

that is not the hierarchic organization Givón has in mind when he first introduces the notion by linking it to sentence-level tree structures (p.4–6).

A very different problem area is the paratactic-to-syntactic shift, of which I believe *The genesis of syntactic complexity* tends to exaggerate the explanatory potential, both in language acquisition and in language change. With respect to language acquisition, Givón, in defending the paratactic-to-syntactic shift, argues against the acquisitional pathway for clause-embedding outlined by Diessel and Tomasello (2001). The latter maintain that children acquire complement constructions first as simple propositions in which the 'main' verb functions as a modal operator, while truly embedded complement clauses develop out of these precursors only at a later stage. So children start with holistically acquired chunks (*I think*, *guess what*, *see*, etc.) that only afterwards get analyzed for what they are in the adult input. This violates the paratactic-to-syntactic shift, and with it the idea that complexity arises through synthesis rather than analysis. Even so, I think it poses no major problem to Givón's overall argumentation, since the main points are unaffected (i.e. the use of context-dependent unencoded means as a first step in the acquisition of grammatical equivalents; and the resemblance between child and primate communication and communicative ecology). The fact that child language converges on an existing model makes the process of language acquisition different enough from language change and language evolution (Slobin 2002) to expect and explain such discrepancies. Yet, Givón goes to great lengths to counter Diessel and Tomasello's (2001) view, making a number of less convincing claims along the way.

On the one hand, Givón submits that the first holistic chunks children produce have paratactic precursors, not just as functional equivalents but as the uses out of which later syntactic uses develop. These are mainly to be found in the dyadic interaction between parent and child, in which parent and child jointly construe modal or referential meaning. An example is (5) (from p.160), where the parent supplies a modal operator, after the child has supplied various chunks of the full proposition. The child can acquire the use of the operator by 'merging' (p.231) its own utterance with that of the adult.

(5)	NINA:	The cookie for Poy.	(request)
	MOTHER:	Do you want to give Poy a cookie?	(offer)

That these jointly construed modalized propositions form the precursor to modal marking in the child's own usage is an intriguing possibility – though one that is hard to prove, as Givón admits (p.161), and presupposes a special merging mechanism. However, supposing this view is correct, it would still drastically redefine the paratactic-to-syntactic shift, since it does not involve automation of frequently co-occurring adjacent patterns, nor is there any continuity between the source structure and a superficially identical structure with a new underlying analysis. So, the major parallelism with diachrony is lost anyway.

On the other, Givón downplays the importance of the subsequent step whereby holistically acquired chunks are analyzed into embedded structures, claiming (on p.169) that:

> There is no independent syntactic evidence that the two stages [...] differ syntactically in any demonstrable way.

But in fact there seems to be some evidence that adults and children differ in the structural status they assign to complement-taking verbs, as shown by Givón's example of overgeneralization in child usage in (6) (quoted from p.153).

(6)	NINA:	I forgot [to put] some more sticks in this, in this ...	(PAST)
		Two sticks wanna go in this truck.	(request)

On the whole, then, the evidence for the synthetic/combinatorial pathway to grammatical complexity in language acquisition may have been overstated.

Regarding language change, *The genesis of syntactic complexity* describes a number of different diachronic pathways leading to clause-union and relativization. Convincing evidence is presented that both clause-union and relativization can arise out of paratactic sources. However, it is repeatedly suggested that these are the only or at least the most important pathways to clause-union. In the chapter on clause-union, Givón speaks of "the two *main* diachronic pathways through which complex verb phrases [...] may arise" (p.61, italics added). In the chapter on relative clauses, announcement is made of "a more comprehensive typology of the diachronic pathways that give rise to REL-clauses", which is claimed to generalize over an earlier typology of relative clauses that had yielded "7–8 *major* synchronic types" (p.96, italics added). One is left with the impression that nearly all embedded clauses have some paratactic precursor.

However, another major source of embedded clauses is the reanalysis and expansion of deverbal derivations (Disterheft 1981). A well-described example is the history of the English gerund, which began as a deverbal nominalization in *-ing/ung* with nominal syntax, as in (7a) but developed into a clause, as in (7b). As the distribution of gerunds remained modeled on that of noun phrases, this process resulted in the appearance of gerunds as complement clauses to numerous transitive verbs, as in (7c). By now, some of these new verb-complement combinations display early signs of developing into auxiliary-verb combinations, as in (7d), where *look like* marks subjective speaker expectation (rather than objective resemblance). This last stage of the development is familiar enough, yet at no point has a paratactic source been involved in the preceding history.

(7) a. ðurh ðæra sacerda blawunge toburston ða wealles. (c1000, Visser 1963–73: 1156)
'Through the blowing of the priests, the walls broke down.'

b. Whiche Vine the Foxes sometimes spoyle and endamage by robbyng the fruite. (1579, OED)
‘Foxes sometimes spoil and damage this vine by robbing the fruit.’

c. That ladies who intend dancing minuets do wear lappets. (1787, OED)

d. I.B.M. already has 80 per cent of the world computer market. With its micro-modules it looks like keeping it. (1968, OED)

Some of Givón’s own examples may actually be better explained as having arisen through analogy. For instance, the Mandarin relativisation structure in (8a) (discussed by Givón on p.112–114) is in fact analogous to the nominal reference point construction in (8b). Seeing this parallelism, given the very permeable nature of the verb-noun distinction in Mandarin, and given that both the relative clause construction and the reference point construction aid identification of a nominal referent, a historical connection between the two structures in (8) is entirely plausible. No paratactic precursor is needed to explain the relative clause structure: simple reinterpretation of a nominal as a clausal slot would have done the job.

(8) a. jīntiān yíng de rén yùnqì hǎo (Li and Thompson 1981: 581)
today win NOM person luck good
The people who won today had good luck

b. tùzi de ěrduō (Li and Thompson 1981: 113)
rabbit GEN ear
(a) rabbit’s ear

From this it appears that *The genesis of syntactic complexity* has to some extent been selective in the diachronic pathways it highlights, focusing too exclusively on changes with a paratactic source and perhaps even occasionally forcing other types of change into this mould.

This has consequences for the overall argument. In light of the purely paratactic nature of pre-grammatical modes of communication (in children, pidgin speakers, aphasia patients), and assuming that these can be compared to an early mode of human communication, the very first steps in the emergence of grammar are likely to have involved recruitment of syntactic patterns from paratactic sources, but once language had *some* structure (say, simple clauses, word class distinctions), the rules of the game would have been transformed and much more diverse analogy-based pathways of change would have become possible (see e.g. De Smet 2009 on the emergence of new syntactic structure through analogy). For the genesis of complex syntax, *The genesis of syntactic complexity* presents the paratactic-to-syntactic shift as the sole pathway to clause-embedding, but fails to motivate this less-than-obvious choice.

Despite these points of concern, *The genesis of syntactic complexity* is an exciting and challenging book that succeeds in developing a detailed and consistent framework for interpreting the evolution of human language and the place of syntax in this development. It contains several original ideas and the way these are linked in with the evidence from a wide range of different research disciplines is definitely impressive. Bearing on a very general and fundamental issue, but bringing to it the insights from various very specific subfields, the book can be expected to leave few linguists unmoved. Most importantly, perhaps, it holds out the exciting promise of integrating linguistics with what its author sees as the true mother discipline of the study of mind and behaviour, biology.

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